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TITLE: STRUCTURE FOR MOUNTING PART OF  
SURFACE-MOUNT PRINTED WIRING BOARD

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COUNTRY

N/A

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ABSTRACT:

PURPOSE: To increase the adhesion strength of surface-mount parts to a surface-mount printed wiring board and prevent these parts from coming off during handling by forming a sacrificed pattern between soldering pads in the surface of the board and applying an adhesive agent to this pattern to thereby bond the parts.

CONSTITUTION: A sacrificed pattern 10 having the same thickness as that of soldering pads 6 is formed between these pads on the surface of a board 2, adhesive agent 8 is applied to the pattern 10 to thereby

bond surface-mount parts 4. Since the thickness of the pattern 10 is equal to that of the pads 6, all the pads 6 and pattern 10 come in contact at the same time with the bottom face of the surface-mount parts 4 when these parts are mounted on the surface-mount printed wiring board 1. Thus, the adhesion strength of the parts 4 to the circuit board 10 can be increased with keeping a good contact condition of the soldering pads with electrodes.

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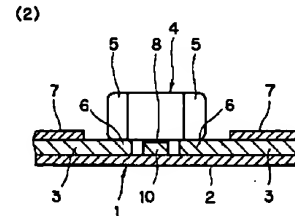
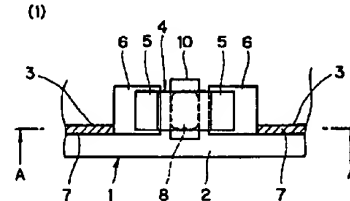
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(54) 【発明の名称】 表面実装プリント配線板の部品取付け構造

(57) 【要約】

【目的】 取付時に接着剤の接着強度が弱くなることのない、表面実装プリント配線板の部品取付け構造を提供することを目的とする。

【構成】 基板2の表面に表面実装部品4の電極5をはんだ付けするはんだ付パッド6を形成した表面実装プリント配線板1において、基板2の表面の前記はんだ付パッド6の間に捨てパターン10を形成し、この捨てパターン10の上に接着剤8を塗布して表面実装部品4を接着させるようにした。



- 1 表面実装プリント配線板
- 2 基板
- 4 表面実装部品
- 5 電極
- 6 はんだ付パッド
- 8 接着剤
- 10 捨てパターン

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## 【特許請求の範囲】

【請求項1】 基板の表面に表面実装部品の電極をはんだ付けするはんだ付パッドを形成した表面実装プリント配線板において、前記基板の表面の前記はんだ付パッドの間に捨てパターンを形成し、この捨てパターン上に接着剤を塗布して表面実装部品を接着させるようにしたことを特徴する表面実装プリント配線板の部品取付け構造。

【請求項2】 前記捨てパターンを前記はんだ付パッドと同じ厚さに形成したことを特徴とする請求項1記載の表面実装プリント配線板の部品取付け構造。

【請求項3】 前記捨てパターンの形状を任意に選択し、前記はんだ付パッドのほぼ中央に形成したことを特徴とする請求項1または請求項2記載の表面実装プリント配線板の部品取付け構造。

## 【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、表面実装プリント配線板に関するもので、特に表面実装部品を搭載する時に接着剤を塗布して固定する表面実装プリント配線板に関するものである。

【0002】

【従来の技術】従来の表面実装プリント配線板の部品取付け構造を図3および図4に示す。これらの図において、表面実装プリント配線板1は基板2の表面に、パターン3とこのパターン3に接続したはんだ付パッド6を形成し、さらに前記パターン3の上にソルダーレジスト被膜7を印刷して構成されている。

【0003】前記はんだ付パッド6は表面実装部品4の電極5をはんだ付けするためのものであり、表面実装プリント配線板1に表面実装部品4を取付ける際には、図4に示すように、はんだ付パッド6の間の基板2の表面に接着剤8を塗布して、表面実装部品4の電極5がはんだ付パッド6に接するように表面実装部品4を接着している。この時、はんだ付パッド6とその間の基板2に若干ながら段差があるため、表面実装部品4の底面とはんだ付パッド6が接触し、表面実装部品4と基板2の間には隙間ができることとなり、この隙間を埋める量の接着剤が必要となる。

【0004】このため、図5に示すように前記基板2の表面の空きスペースに捨てパターン9を設け、この捨てパターン9の上に接着剤8aを試験的に塗布し、この接着剤8aの塗布状態を参考に、はんだ付パッド6の間へ適量の接着剤を塗布するようにしていた。

【0005】

【発明が解決しようとする課題】しかしながら上記従来の表面実装プリント配線板の部品取付け構造においては、接着剤8の塗布位置の基板2と表面実装部品4との密着性が低いため、接着剤8の表面実装部品4との接触面積が小さくなることがあった。

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【0006】このため、表面実装プリント配線板1と表面実装部品4との接着強度が弱くなり、搬送等の取扱い中に表面実装部品4が落下するという問題があった。

【0007】さらに、はんだ付パッド6の間における適切な接着剤8の塗布位置の選定が難しく、図6および図7に示すように接着剤8の塗布位置にばらつきが生じ、表面実装部品4を載置したときに、はんだ付パッド6の上に接着剤8がにじみだし、表面実装部品4を取付けた後、電極5とはんだ付パッド6のはんだ付け作業を行う際に、はんだ付不良の原因になるという問題があった。

【0008】本発明は上記の問題点を解消するものであり、その第一の目的とするところは取付時に接着剤の接着強度が弱くならない表面実装プリント配線板の部品取付け構造を提供することにある。

【0009】その第二の目的とするところは接着剤の適切な塗布位置が容易に判断でき、接着剤のにじみが起こらない表面実装プリント配線板の部品取付け構造を提供することにある。

【0010】

【課題を解決するための手段】上記の目的を達成するために本発明は、基板の表面に表面実装部品の電極をはんだ付けするはんだ付パッドを形成した表面実装プリント配線板において、前記基板の表面の前記はんだ付パッドの間に捨てパターンを形成し、この捨てパターン上に接着剤を塗布して表面実装部品を接着させるようにしたものである。

【0011】好ましくは前記捨てパターンを前記はんだ付パッドと同じ厚さに形成してもよい。

【0012】さらに、好ましくは前記捨てパターンの形状を任意に選択して、前記はんだ付パッドのほぼ中央に形成してもよい。

【0013】

【作用】かかる構成により、前記表面実装部品の底面と、前記表面実装プリント配線板表面の前記表面実装部品取付け位置である前記捨てパターンとの密着性が高まるため、前記捨てパターンの表面に接着剤を塗布し前記表面実装部品を取付けることにより、前記表面実装部品と前記表面実装プリント配線板との接着強度が強くなる。

【0014】また、基板に接着剤を塗布するときに、前記捨てパターンが目印になるため、接着剤の塗布位置や接着剤の塗布量の判別が容易になる。

【0015】

【実施例】以下、図面に基づき本発明に係わる表面実装プリント配線板の部品取付け構造の実施例に付いて説明するが従来と同じ構成に付いては同じ符号を記しその説明を省略する。

【0016】図1(1)は本発明に係わる表面実装プリント配線板の部品取付け構造の第一の実施例の平面図であり、図1(2)は図1(1)のA-A線に沿う断面図

であるが、これらの図において、基板2の表面のはんだ付パッド6の間にはんだ付パッド6と同じ厚さの捨てパターン10を形成しており、この捨てパターン10の上に接着剤8を塗布し、表面実装部品4を接着している。

【0017】次に上記のように構成された実施例の動作に付いて説明する。上記構成の実施例において、はんだ付パッド6の間の前記捨てパターン10の上に接着剤8を塗布するために、この捨てパターン10の表面で接着剤8の塗布位置の位置取りができ、接着剤8がはんだ付パッド6の表面にはみ出さないように調整することができる。

【0018】また、前記捨てパターン10は基板上に若干の厚みを持って形成されているため、捨てパターン10と表面実装部品4の圧着性が良化する。このため、前記捨てパターン10の上に接着剤8を塗布し、表面実装部品4を接着したときの接着面積が広くなり接着剤8の接着力が強くなる。

【0019】とくに上記実施例においては、捨てパターン10の厚さははんだ付パッド6と同じ厚さに形成したため、表面実装プリント配線板1に表面実装部品4を載置した時に、表面実装部品4の底面と、はんだ付パッド6、前記捨てパターン10の両方が同時に接触するようになっており、電極とはんだ付パッドの接触状態を良好に保ちながら、表面実装部品4と表面実装プリント配線板1との接着強度を強くすることができる。

【0020】図2は本発明に係わる表面実装プリント配線板の部品取付け構造の第二の実施例の平面図であるが図2において、基板2の表面のはんだ付パッド6の間のほぼ中央に、二つの円形に形状を選択した捨てパターン10aが形成されている。

【0021】上記構成の第二の実施例では第一の実施例と同じ効果が得られ、さらに捨てパターン10aをはんだ付パッド6の間のほぼ中央に形成したため、捨てパターン10aの表面に接着剤8をはみ出さないように塗布することで適切な位置に接着剤8を塗布することになる。

【0022】また、接着剤8を塗布した時の前記捨てパターン10aに対する接着剤8の塗布範囲や隆起状態により、接着剤8の塗布量の判断がより的確にできるようになる。

【0023】

【発明の効果】以上説明したように請求項1記載の発明によれば、前記表面実装部品と、前記捨てパターンとの密着性が高まるため、前記捨てパターンの表面に接着剤を塗布し前記表面実装部品を取付けることにより、前記

表面実装部品と前記表面実装プリント配線板との接着強度が強くなり、搬送等の取扱い中に表面実装部品4が落下することを防止できる。

【0024】また、基板に接着剤を塗布するときに、前記捨てパターンが目印になるため、接着剤の塗布位置や接着剤の塗布量の判別が容易になり、適切な位置に接着剤を塗布することができ、はんだ付パッドへの接着剤のにじみを防止できる。

【0025】請求項2記載の発明によれば、前記表面実装部品の底面が前記はんだ付パッドと前記捨てパターンに同時に接触するため、電極とはんだ付パッドの接触状態を良好に保ちながら、前記表面実装部品と前記捨てパターンとの接着強度を高めることができる。

【0026】請求項3記載の発明によれば、前記捨てパターンの形状を任意に選択し、前記はんだ付パッドのほぼ中央に形成しているため、前記捨てパターンよりはみ出さないように前記剤を塗布することで適切な位置に前記接着剤を塗布することになる。

【0027】さらに、前記接着剤を塗布した時の前記捨てパターンに対する前記接着剤の塗布範囲や隆起状態により、前記接着剤の塗布量の判断がより的確にできるようになる。

【図面の簡単な説明】

【図1】(1)本発明に係わる表面実装プリント配線板の部品取付け構造の第一の実施例の平面図である。

(2)図1(1)のA-A線に沿う断面図である。

【図2】本発明に係わる表面実装プリント配線板の部品取付け構造の第二の実施例の平面図である。

【図3】従来の表面実装プリント配線板の部品取付け構造の平面図である。

【図4】図3のB-B線に沿う断面図である。

【図5】従来の表面実装プリント配線板の平面図である。

【図6】従来の表面実装プリント配線板の部品取付け構造の問題点の説明図。

【図7】図6のC-C線に沿う断面図である。

【符号の説明】

1 表面実装プリント配線板

2 基板

40 4 表面実装部品

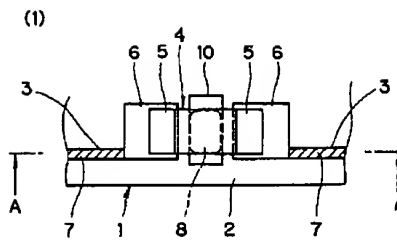
5 電極

6 はんだ付パッド

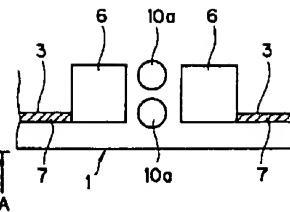
8 接着剤

10 捨てパターン

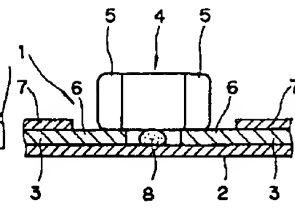
【図1】



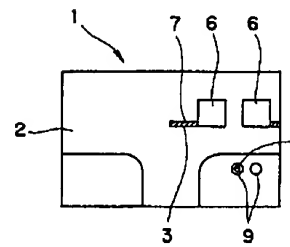
【図2】



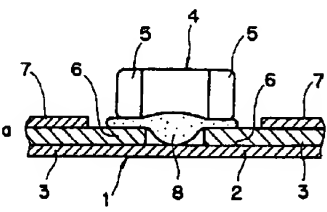
【図4】



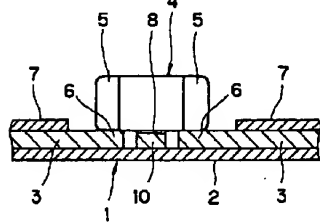
【図5】



【図7】

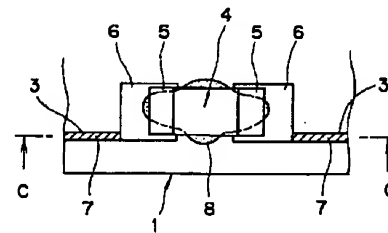


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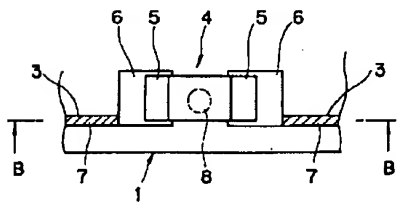


- 1 表面実装プリント配線板
- 2 基板
- 4 表面実装部品
- 5 電極
- 6 はんだ付パッド
- 8 接着剤
- 10 捨てパターン

【図6】



【図3】



# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : HITACHI TELECOM TECHNOLOGICAL LTD

(22)Date of filing : 25.07.1994

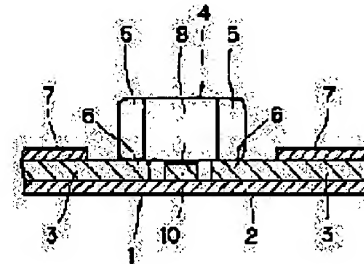
(72)Inventor : EBISAWA HIROSHI

## (54) STRUCTURE FOR MOUNTING PART OF SURFACE-MOUNT PRINTED WIRING BOARD

### (57)Abstract:

**PURPOSE:** To increase the adhesion strength of surface-mount parts to a surface-mount printed wiring board and prevent these parts from coming off during handling by forming a sacrificed pattern between soldering pads in the surface of the board and applying an adhesive agent to this pattern to thereby bond the parts.

**CONSTITUTION:** A sacrificed pattern 10 having the same thickness as that of soldering pads 6 is formed between these pads on the surface of a board 2, adhesive agent 8 is applied to the pattern 10 to thereby bond surface-mount parts 4. Since the thickness of the pattern 10 is equal to that of the pads 6, all the pads 6 and pattern 10 come in contact at the same time with the bottom face of the surface-mount parts 4 when these parts are mounted on the surface-mount printed wiring board 1. Thus, the adhesion strength of the parts 4 to the circuit board 10 can be increased with keeping a good contact condition of the soldering pads with electrodes.



## LEGAL STATUS

[Date of request for examination]

25.09.2000

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[Date of sending the examiner's decision of rejection] 11.03.2003

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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 CLAIMS
 

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[Claim(s)]

[Claim 1] Components attaching structure of the surface mount printed wired board which throws away between said soldering pads of the front face of said substrate, forms a pattern in the surface mount printed wired board in which the soldering pad which solders the electrode of a surface mounted device on the surface of a substrate was formed, and carries out the description of this thing [ throwing away, applying adhesives on a pattern and having made it paste up a surface mounted device ].

[Claim 2] Components attaching structure of the surface mount printed wired board according to claim 1 characterized by said thing [ having thrown away and having formed the pattern in the same thickness as said soldering pad ].

[Claim 3] Components attaching structure of said surface mount printed wired board according to claim 1 or 2 which throws away, chooses the configuration of a pattern as arbitration and is characterized by the thing of said soldering pad mostly formed in the center.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] About a surface mount printed wired board, this invention relates to the surface mount printed wired board which applies adhesives and is fixed, when especially a surface mounted device is carried.

[0002]

[Description of the Prior Art] The components attaching structure of the conventional surface mount printed wired board is shown in drawing 3 and drawing 4. In these drawings, the surface mount printed wired board 1 forms the soldering pad 6 linked to a pattern 3 and this pattern 3 in the front face of a substrate 2, further, on said pattern 3, prints the solder resist coat 7 and is constituted.

[0003] Said soldering pad 6 is for soldering the electrode 5 of a surface mounted device 4, and as shown in drawing 4, adhesives 8 were applied to the front face of the substrate 2 between the soldering pads 6, and in case a surface mounted device 4 is attached in the surface mount printed wired board 1, the surface mounted device 4 is pasted up so that the electrode 5 of a surface mounted device 4 may touch the soldering pad 6. Since a level difference is in the soldering pad 6 and the substrate 2 in the meantime with some at this time, the base and the soldering pad 6 of a surface mounted device 4 will contact, a clearance will be made between a surface mounted device 4 and a substrate 2, and the adhesives of an amount with which this clearance is filled up are needed.

[0004] for this reason, it is shown in drawing 5 -- as -- the free space of the front face of said substrate 2 -- throwing away -- a pattern 9 -- preparing -- this -- it throws away, and he applies adhesives 8a in a tentative way on a pattern 9, and was trying to apply the adhesives of optimum dose to reference for the spreading condition of this adhesives 8a between the soldering pads 6

[0005]

[Problem(s) to be Solved by the Invention] However, in the components attaching structure of the above-mentioned conventional surface mount printed wired board, since the adhesion of the substrate 2 of the spreading location of adhesives 8 and a surface mounted device 4 was low, the touch area with the surface mounted device 4 of adhesives 8 might become small.

[0006] For this reason, the bond strength of the surface mount printed wired board 1 and a surface mounted device 4 became weak, and there was a problem that a surface mounted device 4 fell during the handling of conveyance etc.

[0007] Furthermore, when performing soldering of an electrode 5 and the soldering pad 6 after adhesives' 8 having bled and attaching a board and a surface mounted device 4 on the soldering pad 6, when selection of the spreading location of the suitable adhesives 8 between the soldering pads 6 is difficult, dispersion arises in the spreading location of adhesives 8 as shown in drawing 6 and drawing 7, and a surface mounted device 4 is laid, there was a problem became the cause of poor soldering.

[0008] This invention cancels the above-mentioned trouble and the place made into the first purpose is to offer the components attaching structure of the surface mount printed wired board to which the bond strength of adhesives does not become weak at the time of attachment.

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[0009] The suitable spreading location of adhesives can judge easily the place made into the second purpose, and it is in offering the components attaching structure of a surface mount printed wired board from which a blot of adhesives does not take place.

[0010]

[Means for Solving the Problem] the surface mount printed wired board in which the soldering pad with which this invention solders the electrode of a surface mounted device on the surface of a substrate in order to attain the above-mentioned purpose was formed -- setting -- between said soldering pads of the front face of said substrate -- throwing away -- a pattern -- forming -- this -- it throws away, adhesives are applied on a pattern and it is made to paste up a surface mounted device

[0011] desirable -- said -- it may throw away and a pattern may be formed in the same thickness as said soldering pad.

[0012] furthermore -- desirable -- said -- throwing away -- the configuration of a pattern -- arbitration -- choosing -- said soldering pad -- you may form in the center mostly.

[0013]

[Function] By this configuration, since [ which is said surface mounted device fitting location of the base of said surface mounted device, and said surface mount printed wired board front face / said ] it throws away and adhesion with a pattern increases, the bond strength of said surface mounted device and said surface mount printed wired board becomes strong by [ said ] throwing away, applying adhesives on the surface of a pattern, and attaching said surface mounted device.

[0014] Moreover, when applying adhesives to a substrate, since [ said ] it throws away and a pattern becomes a mark, distinction of the coverage of the spreading location of adhesives or adhesives becomes easy.

[0015]

[Example] Although attached and explained to the example of the components attaching structure of the surface mount printed wired board concerning this invention based on a drawing, if it is hereafter attached to the same configuration as the former, the same sign is described and the explanation is omitted.

[0016] although drawing 1 (1) is the top view of the first example of the components attaching structure of the surface mount printed wired board concerning this invention and drawing 1 (2) is a sectional view which meets the A-A line of drawing 1 (1) -- these drawings -- setting -- the thickness same between the soldering pads 6 of the front face of a substrate 2 as the soldering pad 6 -- throwing away -- a pattern 10 -- forming -- \*\*\*\* -- this -- it threw away, adhesives 8 were applied on the pattern 10, and the surface mounted device 4 is pasted up.

[0017] It attaches and explains to actuation of the example constituted as mentioned above next. the example of the above-mentioned configuration -- setting -- in order [ between the soldering pads 6 / said ] to throw away and to apply adhesives 8 on a pattern 10 -- this -- it throws away and the reference by location of the spreading location of adhesives 8 is made on the front face of a pattern 10, and it can adjust so that adhesives 8 may not begin to see in the front face of the soldering pad 6.

[0018] Moreover, it throws away, and since [ said ] the pattern 10 is formed with some thickness on the substrate, it throws away and the sticking-by-pressure nature of a pattern 10 and a surface mounted device 4 improves. For this reason, said adhesion area when throwing away, applying adhesives 8 on a pattern 10, and pasting up a surface mounted device 4 becomes large, and the adhesive strength of adhesives 8 becomes strong.

[0019] the time of laying a surface mounted device 4 in the surface mount printed wired board 1, since it threw away and the thickness of a pattern 10 was formed in the same thickness as the soldering pad 6 especially in the above-mentioned example -- the base of a surface mounted device 4, and the soldering pad 6 -- said -- bond strength of a surface mounted device 4 and the surface mount printed wired board 1 can be strengthened, throwing away, and both patterns 10 contacting coincidence and keeping the contact condition of an electrode and a soldering pad good.

[0020] Although drawing 2 is the top view of the second example of the components attaching structure of the surface mount printed wired board concerning this invention, in drawing 2 , while being the

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soldering pad 6 of the front face of a substrate 2, a configuration is mostly chosen and thrown away into two round shapes in the center, and pattern 10a is formed.

[0021] In the second example of the above-mentioned configuration, the same effectiveness as the first example will be acquired and adhesives 8 will be applied to a suitable location by applying so that it throws away further, pattern 10a may be thrown away since [ between the soldering pads 6 ] it formed in the center mostly, and adhesives 8 may not be protruded into the front face of pattern 10a.

[0022] Moreover, it comes to be able to perform decision of the coverage of adhesives 8 more exactly according to said spreading range of the adhesives [ as opposed to / throw away and / pattern 10a ] 8 when applying adhesives 8, or an upheaval condition.

[0023]

[Effect of the Invention] As explained above, it can prevent that according to invention according to claim 1 the bond strength of said surface mounted device and said surface mount printed wired board becomes strong, and a surface mounted device 4 falls during the handling of conveyance etc. with said surface mounted device by [ said ] throwing away, applying adhesives on the surface of a pattern, and attaching said surface mounted device since [ said ] it throws away and adhesion with a pattern increases.

[0024] Moreover, when applying adhesives to a substrate, since [ said ] it throws away and a pattern becomes a mark, distinction of the coverage of the spreading location of adhesives or adhesives can become easy, can apply adhesives to a suitable location, and can prevent a blot of the adhesives to a soldering pad.

[0025] said soldering pad, in order [ said ] to throw away and to contact a pattern at coincidence, while the base of said surface mounted device keeps the contact condition of an electrode and a soldering pad good according to invention according to claim 2 -- said surface mounted device -- said -- it can throw away and bond strength with a pattern can be raised.

[0026] according to invention according to claim 3 -- said -- it throws away and the configuration of a pattern is chosen as arbitration, and since [ of said soldering pad ] it forms in the center mostly, said adhesives will be applied to a suitable location by said thing [ applying the aforementioned agent so that it may throw away and may not begin to see rather than a pattern ].

[0027] Furthermore, it comes to be able to perform decision of the coverage of said adhesives more exactly according to said spreading range of said adhesives [ as opposed to / throw away and / a pattern ] when applying said adhesives, or an upheaval condition.

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EFFECT OF THE INVENTION

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[Effect of the Invention] As explained above, it can prevent that according to invention according to claim 1 the bond strength of said surface mounted device and said surface mount printed wired board becomes strong, and a surface mounted device 4 falls during the handling of conveyance etc. with said surface mounted device by [ said ] throwing away, applying adhesives on the surface of a pattern, and attaching said surface mounted device since [ said ] it throws away and adhesion with a pattern increases.

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[0026] according to invention according to claim 3 -- said -- it throws away and the configuration of a pattern is chosen as arbitration, and since [ of said soldering pad ] it forms in the center mostly, said adhesives will be applied to a suitable location by said thing [ applying the aforementioned agent so that it may throw away and may not begin to see rather than a pattern ].

[0027] Furthermore, it comes to be able to perform decision of the coverage of said adhesives more exactly according to said spreading range of said adhesives [ as opposed to / throw away and / a pattern ] when applying said adhesives, or an upheaval condition.

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MEANS

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[Means for Solving the Problem] the surface mount printed wired board in which the soldering pad with which this invention solders the electrode of a surface mounted device on the surface of a substrate in order to attain the above-mentioned purpose was formed -- setting -- between said soldering pads of the front face of said substrate -- throwing away -- a pattern -- forming -- this -- it throws away, adhesives are applied on a pattern and it is made to paste up a surface mounted device

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DESCRIPTION OF DRAWINGS

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## [Brief Description of the Drawings]

[Drawing 1] (1) It is the top view of the first example of the components attaching structure of the surface mount printed wired board concerning this invention.

(2) It is the sectional view which meets the A-A line of drawing 1 (1).

[Drawing 2] It is the top view of the second example of the components attaching structure of the surface mount printed wired board concerning this invention.

[Drawing 3] It is the top view of the components attaching structure of the conventional surface mount printed wired board.

[Drawing 4] It is the sectional view which meets the B-B line of drawing 3.

[Drawing 5] It is the top view of the conventional surface mount printed wired board.

[Drawing 6] The explanatory view of the trouble of the components attaching structure of the conventional surface mount printed wired board.

[Drawing 7] It is the sectional view which meets the C-C line of drawing 6.

## [Description of Notations]

1 Surface Mount Printed Wired Board

2 Substrate

4 Surface Mounted Device

5 Electrode

6 Soldering Pad

8 Adhesives

10 Throw Away and it is Pattern.

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